EPA Superfund
Explanation of Significant Differences

COAKLEY LANDFILL SUPERFUND SITE
EPA ID: NHD064424153
OU 01
NORTH HAMPTON AND GREENLAND, NH
July, 2009

(re-issued) Fourth Explanation of Significant Differences
Coakley Landfill Superfund Site, OU 1
July, 2009

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DECLARATION FOR THE (re-issued) FOURTH EXPLANATION OF SIGNIFICANT DIFFERENCES COAKLEY LANDFILL SUPERFUND SITE, OU 1

SITE NAME AND LOCATION

Coakley Landfill Superfund Site
North Hampton and Greenland, New Hampshire

STATEMENT OF PURPOSE

This decision document sets forth the basis for the determination to issue the attached Explanation of Significant Differences (ESD) for the Coakley Landfill Superfund Site (the Site), Operable Unit 1 (OU1), in North Hampton and Greenland, New Hampshire.

STATUTORY BASIS FOR ISSUANCE OF THE ESD

Under Section 117(c) of the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), 42 U.S.C. Section 9617(c), requires that, if the remedial action being undertaken at a site differs significantly from the Record of Decision (ROD) for that site, EPA shall publish an explanation of the significant differences and the reasons such changes were made. The National Contingency Plan (NCP), 40 C.F.R. § 300.435(c)(2)(i), and Office of Solid Waste and Emergency Response (OSWER) Directive 9355.3-02, indicate that an ESD, rather than a ROD amendment, is appropriate where the adjustments being made to the ROD are significant but do not fundamentally alter the remedy with respect to scope, performance, or cost. EPA has determined that the adjustments to the June 28, 1990 OU1 ROD provided in this ESD are significant but do not fundamentally alter the overall OU1 remedy for the Coakley Landfill Superfund Site with respect to scope, performance, or cost. Therefore, this ESD is being properly issued.

In accordance with Section 300.825(a)(2) of the NCP, this ESD will become part of the Administrative Record for the Site and will be available for public review at both the EPA Region 1 Record Center in Boston, Massachusetts and the North Hampton Public Library in North Hampton, New Hampshire.

OVERVIEW OF THE ESD

After the June 28, 1990 OU1 ROD was issued, the Safe Drinking Water Act Maximum Contaminant Level (MCL) for arsenic was revised from 0.05 mg/l to 0.010 mg/l. The ESD, originally issued in 2007, incorrectly cited the MCL for arsenic as 0.10 mg/l. This document 're-issues' the September, 2007 ESD and clarifies the MCL for arsenic was revised from 0.05 mg/l to 0.010 mg/l.

After the June 28, 1990 OU1 ROD was issued, the EPA issued a Health Advisory for manganese that originally was 0.18 mg/l. It has since been increased to 0.3 mg/l. EPA Health Advisories provide information on contaminants that can cause human health effects and are known or anticipated to occur in drinking water. Health Advisories are guidance values based on non-cancer health effects for different durations of exposure (e.g., one-day, ten-day, and lifetime). The Health Advisory for manganese has been added as an action-specific To Be Considered standard for monitoring the protectiveness of the OU1 source control remedy.

This ESD documents a change in the groundwater monitoring standards for the Site to include a new chemical of concern, tetrahydrofuran. The result of recent annual monitoring reports indicates that well MW-8, within OU1, is contaminated with tetrahydrofuran in concentrations which exceed the New Hampshire Ambient Groundwater Quality Standards (NH AGQS) (Env-Or 603.03, Table 600-1) of 0.154 mg/l. There are presently no federal drinking water standards for tetrahydrofuran.

Since the 1990 OU1 ROD was issued, the State of New Hampshire has revised and renumbered its environmental regulations. This ESD updates ARARs cited in the 1990 ROD both to include the revised State standards and to identify additional standards that were not specifically identified in the 1990 ROD (Attachment 2). None of the revisions significantly changes the scope of the remedy.

The State of New Hampshire has reviewed and commented on this ESD and concurs with its issuance.

DECLARATION

For the foregoing reasons, by my signature below, I approve the issuance of an Explanation of Significant Differences for Operable Unit 1 of the Coakley Landfill Superfund Site in North Hampton and Greenland, New Hampshire, and the changes stated therein.

July 29, 2009
Date

James T. Owens III, Director
Office of Site Remediation and Restoration
U.S. Environmental Protection Agency
Region 1 New England

(re-issued) EXPLANATION OF SIGNIFICANT DIFFERENCES
COAKLEY LANDFILL SUPERFUND SITE, OU 1
NORTH HAMPTON AND GREENLAND, NEW HAMPSHIRE

I. INTRODUCTION

A. Site Name and Location

Site Name:	Coakley Landfill Superfund Site (the "Site")
Site Location:	Towns of North Hampton and Greenland, Rockingham County, New Hampshire (see map in Attachment 1)

B. Lead and Support Agencies

Lead Agency:	United States Environmental Protection Agency (EPA)
Support Agency:	New Hampshire Department of Environmental Services (NH DES)

C. Legal Authority

Under Section 117(c) of the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), 42 U.S.C. § 9617 (c), 40 C.F.R. § 300.435(c) of the National Contingency Plan (NCP), and Office of Solid Waste and Emergency Response (OSWER) Directive 9355.3-02, if EPA determines that differences in the remedial action significantly change but do not fundamentally alter the remedy selected in the Record of Decision (ROD), dated June 28, 1990, for Operable Unit (OU) 1 of the Site with respect to scope, performance, or cost, EPA shall publish an Explanation of Significant Differences (ESD). The ESD shall explain the differences between the remedial action being undertaken and the remedial action set forth in the ROD and the reasons such changes are being made.

D. Summary of Circumstances Necessitating this Explanation of Significant Differences

The 1990 ROD for OU1 identified Safe Drinking Water Act (42 U.S.C. §300f *et seq.*), Maximum Contaminant Levels (MCLs) (40 C.F.R. 141, Subpart B and G) as chemical-

specific ARARs[1] for the purposes of measuring the performance of the remedy at the Site. The OU1 remedy is expected to prevent groundwater exceeding MCLs from migrating beyond the compliance boundary for the Site (which is the outer boundary of OU1).

In 1996, the Safe Drinking Water Act was amended and required EPA to review drinking water standards for arsenic and propose a new MCL. Through proper rulemaking, the MCL for arsenic in drinking water was changed from 0.05 mg/l to 0.010 mg/l. Because groundwater at and beyond the compliance boundary at the Site is federally classified as current or potential drinking water, the performance standard for arsenic for monitoring the protectiveness of the source control remedy at OU1 is being changed from 0.05 mg/l to 0.010 mg/l. This change in the arsenic MCL does not affect the protectiveness of the remedy since the installed source control remedy and institutional controls are preventing consumption of groundwater within OU1 and are also preventing migration of additional contaminated groundwater into OU2 (remediation of off-site groundwater beyond the compliance boundary is being addressed under OU2).

The Drinking Water Health Advisory Program, sponsored by EPA's Health and Ecological Criteria Division of the Office of Science and Technology (OST), Office of Water (OW), provides information on the health and organoleptic (color, taste, odor, etc.) effects of contaminants in drinking water. A Drinking Water Health Advisory describes concentrations of a contaminant in water that are expected not to result in adverse effects on either health or aesthetics. Health Advisories serve as technical guidance to assist Federal, State, and local officials responsible for protecting public health when emergency spills or contamination situations occur. They are subject to change as new information becomes available.

The current and most protective level for manganese is 0.3mg/l according to the *January 2004 Drinking Water Health Advisory for Manganese*. This advisory can be found at: http://www.epa.gov/safewater/ccl/pdfs/reg_determine1/support_ccl_magnese_dwreport.pdf. The lifetime health advisory value of 0.3 mg/l for manganese will protect against concerns of potential neurological effects. The Health Advisory has been added as a action-specific To Be Considered standard for monitoring of the protectiveness of the OU1 source control remedy.

This ESD also documents a change in the groundwater monitoring standards for the Site to include a new chemical of concern, tetrahydrofuran. The result of recent annual monitoring reports indicates that well MW-8, within OU1, is contaminated with tetrahydrofuran in concentrations which exceed the New Hampshire Ambient Groundwater Quality Standards (NH AGQS) (Env-Or 603.03, Table 600-1) of 0.154 mg/l. There are presently no federal drinking water standards for tetrahydrofuran.

[1] Although the ROD listed MCLs as chemical-specific ARARs, this ESD lists them as action-specific ARARs since the standards are being used to monitor the protectiveness of the source control remedy, rather than to establish cleanup standards for groundwater within the OU1 compliance boundary.

Since the 1990 OU1 ROD was issued, the State of New Hampshire has revised and renumbered its environmental regulations. This ESD updates ARARs cited in the 1990 ROD both to include the revised State standards and to identify additional standards that were not specifically identified in the 1990 ROD (Attachment 2). None of the revisions significantly changes the scope of the remedy.

E. Availability of Documents

This Explanation of Significant Differences (ESD) and supporting documentation shall become part of the Administrative Record for the Site. The ESD, supporting documentation for the ESD, and the Administrative Record are available to the public at the following locations and may be reviewed at the times listed below.

U.S. Environmental Protection Agency
Records Center
One Congress Street
Suite 1100
Boston, MA 02114-2023
(617) 918-1440

Monday – Friday 9:00 a.m. to 5:00 p.m.

North Hampton Public Library
237-A Atlantic Avenue
North Hampton, NH 03862
(603) 692-4587

Monday/Wednesday 10:00 a.m. – 8:00 p.m.
Tuesday/Thursday/Friday 10:00 a.m.–5:00 p.m.
Saturday 10:00 a.m.-2:00 p.m.

II. SUMMARY OF SITE HISTORY, CONTAMINATION PROBLEMS AND SELECTED REMEDY

A. Site History and Contamination Problems

The Coakley Landfill Superfund Site includes approximately 92 acres located within the towns of Greenland and North Hampton, Rockingham County, New Hampshire. The actual landfill covers approximately 27 acres. The Site is located about 400 to 800 feet west of Lafayette Road (U.S. Route 1), directly south of Breakfast Hill Road, and about 2.5 miles northeast of the center of the town of North Hampton. The landfill borders farmland, undeveloped woodlands and wetlands to the north and west and commercial and residential properties to the east and south.

Landfill operations began in 1972, with the southern portion of the Site used for waste disposal from the New Hampshire municipalities of Portsmouth, North Hampton, Newington, and New Castle, along with Pease Air Force Base. Concurrent with landfill operations, rock quarrying was conducted at the Site from approximately 1973 through 1977. Much of the refuse disposed of at Coakley Landfill was placed in open (some liquid-filled) trenches created by rock quarrying and sand and gravel mining. In 1982, the city of Portsmouth began operating a refuse-to-energy plant on leased property at Pease Air Force Base. From July 1982 through July 1985, Pease Air Force Base and the municipalities of Rye, North Hampton, Portsmouth, New Castle, Newington and Derry, among others, began transporting their refuse to this plant for incineration. The Coakley Landfill generally accepted incinerator residue from the new plant after July 1982. In March 1983, the New Hampshire Bureau of Solid Waste Management ordered the landfill closed to all waste disposal except burnt residue from the incinerator. In July, 1985 the landfill was closed to all disposal activities.

In 1979, the New Hampshire Waste Management Division received a complaint concerning leachate breakouts in the area. A subsequent investigation by the Bureau of Solid Waste Management resulted in the discovery of allegedly empty drums with markings indicative of cyanide waste.

A second complaint was received in early 1983 by the New Hampshire Water Supply and Pollution Control Commission regarding the water quality from a domestic drinking water well. Testing revealed the presence of five different volatile organic compounds (VOCs).

A subsequent confirmatory sampling beyond these initial wells detected VOC contamination to the south, southeast, and northeast of the Coakley Landfill. As a result, the town of North Hampton extended public water to Lafayette Terrace in 1983 and to Birch and North Roads in 1986. Prior to this time, commercial and residential water supply came from private wells.

Also in 1983, the Rye Water District completed a water main extension along Washington Road to the corner of Lafayette Road (U.S. Route 1) and along Dow Lane. This extension brought the public water supply into the area due east and southeast of the intersection of Breakfast Hill Road and U.S. Route 1. In December 1983, the Coakley Landfill was proposed for listing on the National Priorities List (NPL), and was listed in 1986.

A cooperative agreement between EPA and the State was signed on August 12, 1985 to conduct a Remedial Investigation/Feasibility Study (RI/FS). The State's contractor, Roy F. Weston, Inc., completed the RI/FS which was released for public comment on March 2, 1990.

On June 28, 1990, EPA issued a ROD for the source control operable unit (OU1) of the Site. On March 22, 1991, USEPA issued an ESD concerning modifications to the source control remedy related to landfill cap construction and emissions from air strippers

proposed to be used to treat the leachate. A second ESD was issued on May 17, 1996, which changed active landfill gas collection and treatment to a passive collection system. A third ESD was issued on September 29, 1999 which documented the decision to eliminate leachate collection and treatment. This ESD will be the fourth ESD for OU1. An OU2 ESD is being issued concurrently with this OU1 ESD to document how the changes to contaminant standards have changed the OU2 management of migration remedy.

B. Summary of the Selected Remedy

The remedial action objectives, as stated in the OU1 ROD, are to:

- Prevent ingestion of groundwater containing contamination in excess of federal and state drinking water standards or criteria, or that poses a threat to public health and the environment.
- Prevent the public from direct contact with contaminated soils, sediments, solid waste and surface water which may present a health risk.
- Eliminate or minimize the migration of contaminants from the soil into groundwater.
- Prevent the off-site migration of contaminants above levels protective of public health and the environment.
- Restore ground and surface water, soils and sediments to levels which are protective of public health and the environment.

The major components of the source control remedy as modified by the three prior ESDs are:

- Excavation with disposal onto the landfill, of contaminated sediment in the wetlands
- Consolidate solid waste
- Cap the landfill
- Fence the landfill
- Collect and vent landfill gases
- Long-term environmental monitoring
- Institutional controls - to prevent contact with site contaminants and to protect components of the remedy

III. DESCRIPTION OF SIGNIFICANT DIFFERENCES

In 1996, the Safe Drinking Water Act was amended and required EPA to review drinking water standards for arsenic and propose a new MCL. Through proper rulemaking, the MCL for arsenic in drinking water was changed from 0.05 mg/l to 0.010 mg/l. Because groundwater at and beyond the compliance boundary at Coakley Landfill (the area outside of OU1) is federally classified as current or potential drinking water, the monitoring standard for assessing the protectiveness of the source control remedy at

OU1 for arsenic is being changed from 0.05 mg/l to 0.010 mg/l. The change in the arsenic MCL does not affect the protectiveness of the remedy since the installed source control remedy and institutional controls are preventing consumption of groundwater within OU1 and are also preventing migration of additional contaminated groundwater into OU2 (remediation of off-site groundwater beyond the compliance boundary is being addressed under OU2).

Under the criteria set by an EPA Health Advisory, the protective level for manganese in groundwater is being established at 0.3 mg/l. This level will protect against concerns of potential neurological effects. The Health Advisory has been added as an action-specific To Be Considered standard for monitoring the protectiveness of the OU1 source control remedy.

This ESD documents a change in the groundwater monitoring standards for the Site to include a new chemical of concern, tetrahydrofuran. The result of recent annual monitoring reports indicates that well MW-8, within OU1, is contaminated with tetrahydrofuran in concentrations which exceed the NH AGQS of 0.154 (mg/l). There are presently no federal drinking water standards for tetrahydrofuran.

Since the 1990 OU1 ROD was issued, the State of New Hampshire has revised and renumbered its environmental regulations. This ESD updates ARARs cited in the 1990 ROD both to include the revised State standards and to identify additional standards that were not specifically identified in the 1990 ROD (Attachment 2). None of the revisions significantly changes the scope of the remedy.

OU1 ROD Interim Groundwater Cleanup Levels

Original Remedy

The compliance boundary performance standard for arsenic was 0.05 mg/l. No standard was listed for manganese or tetrahydrofuran.

Modified Remedy

The new compliance boundary performance standard for arsenic, based on a revised MCL, is 0.010 mg/l. The new compliance boundary performance standard for manganese, based on a revised Health Advisory, is 0.3 mg/l and the revised Health Advisory has been added as an action-specific To Be Considered standard for assessing the protectiveness of the OU1 source control remedy. Tetrahydrofuran has been added as a contaminant of concern with a compliance boundary monitoring standard of 0.154 mg/l.

IV. SUPPORT AGENCY COMMENTS

The State of New Hampshire has participated with EPA in reviewing the modifications to the remedy which are described herein and concurs with the approach adopted by EPA.

V. STATUTORY DETERMINATION

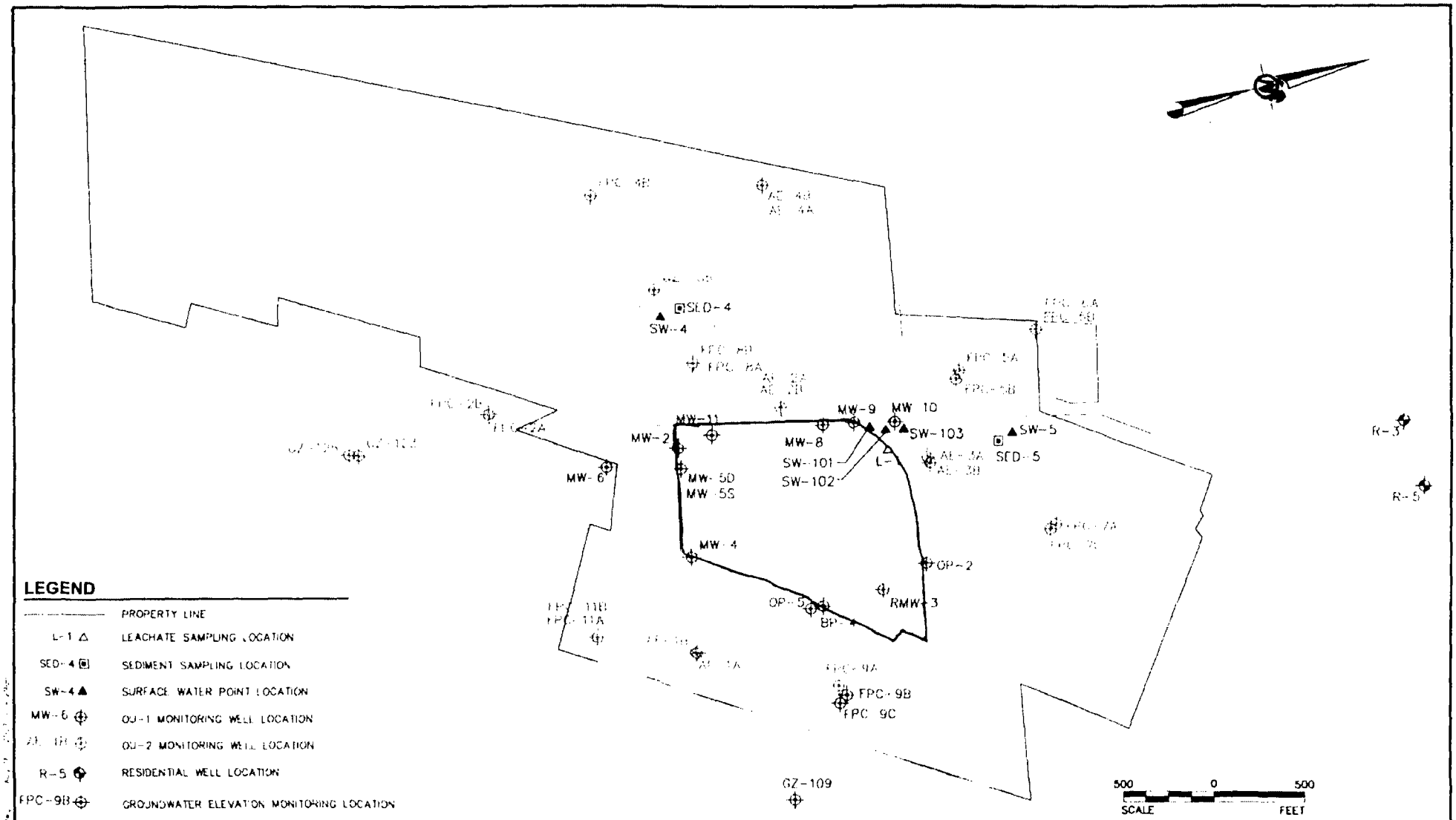
Considering the above outlined adjustment to the selected remedy set forth in the OU1 ROD, as modified in the first three ESDs, EPA believes that the remedy remains protective of human health and the environment, complies with all Federal and State requirements that are applicable or relevant and appropriate to this remedial action, and is cost-effective.

VI. PUBLIC INFORMATION

This ESD and the Administrative Record are available for public review at the locations and times listed in Section 1 above as well as on the internet at www.epa.gov/region1/superfund/coakley. Adobe Reader is required to review the documents. Notice of the release of the ESD will be published in the Hampton Union.

ATTACHMENT 1

Map of Coakley Landfill Superfund Site



LEGEND

———	PROPERTY LINE
L-1 △	LEACHATE SAMPLING LOCATION
SED-4 ▣	SEDIMENT SAMPLING LOCATION
SW-4 ▲	SURFACE WATER POINT LOCATION
MW-6 ⊕	OU-1 MONITORING WELL LOCATION
AE-1B ⊕	OU-2 MONITORING WELL LOCATION
R-5 ◆	RESIDENTIAL WELL LOCATION
FPC-9B ⊕	GROUNDWATER ELEVATION MONITORING LOCATION

NOTES

1. PLAN REFERENCE: ARIES ENGINEERING, INC. PLAN DATED APRIL 2004, ENTITLED "2003 ANNUAL REPORT MONITORING PLAN DATA ASSESSMENT REPORT, COAKLEY LANDFILL, NORTH HAMPTON, NEW HAMPSHIRE, SITE PLAN.
2. SITE FEATURE LOCATIONS AND SCALE ARE APPROXIMATE.

Golder Associates
Manchester, New Hampshire

SCALE	AS SHOWN
DATE	08/16/07
DESIGN	ERM
CADD	MPB
CHECK	
REVIEW	
FILE No.	0636944A001
PROJECT No.	063-6944
REV.	0

TITLE: **ENVIRONMENTAL MONITORING NETWORK**

COAKLEY LANDFILL NORTH HAMPTON, NH

FIGURE: 2-1

ATTACHMENT 2

Table of Revised Applicable and Relevant and Appropriate Standards (ARARs) and To Be Considered Values (TBC)

Attachment 2 - Coakley Landfill Superfund Site, Operable Unit 1 Chemical-specific ARARs

Requirement	Status	Requirement Synopsis	Action to be Taken to Attain ARAR
EPA Risk Reference Dose (RfDs)	To Be Considered	RfDs are considered to be the levels unlikely to cause significant adverse health effects associated with a threshold mechanism of action in human exposure for a lifetime.	Hazards due to noncarcinogens with EPA RfDs are used to evaluate exposures to contaminated media. The source control remedy prevents exposure and migration of contaminants. Use restrictions on the landfill and other remedial components, as well as groundwater use restrictions will be maintained until risks identified under these standards are eliminated.
EPA Carcinogenicity Slope Factor	To Be Considered	Slope factors are developed by EPA from Health Effects Assessments and present the most up-to-date information on cancer risk potency. Slope factors are developed by EPA from Health Effects Assessments by the Carcinogenic Assessment Group.	Risks due to carcinogens as assessed with slope factors are used to evaluate exposures to contaminated media. The source control remedy prevents exposure and migration of contaminants. Use restrictions on the landfill and other remedial components, as well as groundwater use restrictions will be maintained until risks identified under these standards are eliminated.
Guidelines for Carcinogen Risk Assessment EPA/630/P-03/001F (March 2005)	To Be Considered	Guidance for assessing cancer risk.	Risks due to carcinogens are assessed using these guidelines. The source control remedy prevents exposure and migration of contaminants. Use restrictions on the landfill and other remedial components, as well as groundwater use restrictions will be maintained until risks identified under these standards are eliminated.
Supplemental Guidance for Assessing Susceptibility from Early-Life Exposure to Carcinogens EPA/630/R-03/003F (March 2005)	To Be Considered	Guidance of assessing cancer risks to children.	Risks to children due to carcinogens are assessed using these guidelines. The source control remedy prevents exposure and migration of contaminants. Use restrictions on the landfill and other remedial components, as well as groundwater use restrictions will be maintained until risks identified under these standards are eliminated.

Attachment 2 - Coakley Landfill Superfund Site, Operable Unit 1 Chemical-specific ARARs

Requirement	Status	Requirement Synopsis	Action to be Taken to Attain ARAR
Health Advisories (EPA Office of Drinking Water)	To Be Considered	Health Advisories are estimates of risk due to consumption of contaminated drinking water; they consider non-carcinogenic effects only. To be considered for contaminants in groundwater that may be used for drinking water where the standard is more conservative than either federal or state statutory or regulatory standards. The Health Advisory standard for manganese is 0.3 mg/l.	Health advisories will be used to evaluate the non-carcinogenic risk resulting from exposure to certain compounds (e.g., manganese). The source control remedy prevents exposure and migration of contaminants. Use restrictions on the landfill and other remedial components, as well as groundwater use restrictions will be maintained until risks identified under these standards are eliminated.
Soil Remediation Criteria, Env-Or 606.19	Applicable	Numeric soil remediation standards for organic and inorganic contaminants are established, with a provision for development of risk-based site-specific soil remediation standards.	Risks posed by contaminated soils and debris under the landfill cover will be controlled through operation and maintenance of the cap and institutional controls
New Hampshire Department of Environmental Services Risk Characterization and Management Policy (Section 7.4(5))	To be Considered	Establishes GW-1 and GW-2 guidelines for contaminants in groundwater. GW-1 values are equal to the NH AGQS values for ambient groundwater. GW-2 values are based on a subsurface vapor intrusion into buildings to calculate indoor air conservative risk assessments, and therefore apply to volatile contaminants only.	Risks due to groundwater contaminants are assessed using these guidelines. The source control remedy prevents exposure and migration of contaminants. Use restrictions on the landfill and other remedial components, as well as groundwater use restrictions will be maintained until risks identified under these standards are eliminated.

Attachment 2 - Coakley Landfill Superfund Site, Operable Unit 1
Location-specific ARARs

Authority	Requirements	Status	Requirement Synopsis	Action to be Taken to Attain ARAR
Federal Requirements	Fish and Wildlife Coordination Act (16 U.S.C.. §661 *et seq*.); Fish and Wildlife Protection (40 C.F.R. §6.302(g))	Applicable	Any modification of a body of water or wetland requires consultation with the U.S. Fish and Wildlife Service and the appropriate state wildlife agency to develop measures to prevent, mitigate, or compensate for losses of fish and wildlife.	Wetlands are in close proximity to OU 1 where the landfill cap has been constructed. Operation and maintenance of the remedy may have some limited impacts to fish and wildlife resource areas. Planning and decision-making will incorporate fish and wildlife protection considerations in consultation with the resource agencies.
	Protection of Wetlands (40 C.F.R. § 6.302(a); Appendix A)	Applicable	This regulation codifies standards established under Executive Order 11990. Under this requirement, no activity that adversely affects a federal jurisdictional wetland shall be permitted if a practicable alternative with lesser effects is available. Action to avoid, whenever possible, the long- and short-term impacts on wetlands and to preserve and enhance wetlands.	Wetlands are in close proximity to OU 1 where the landfill cap has been constructed. Operation and maintenance of the remedy, along with monitoring activities may have some limited impacts to Federal jurisdictional wetlands. Wetlands disturbed by well installation, landfill cap operation and maintenance, monitoring, or other remedial activities will be mitigated in accordance with requirements.
	Clean Water Act, Section 404 (33 U.S.C.. § 1344); Section 404(b)(1) Guidelines for Specification of Disposal Sites for Dredged or Fill Material (40 C.F.R. Part 230, 231 and 33 C.F.R. Parts 320-323)	Applicable	Under this requirement, no activity that adversely affects a federal jurisdictional wetland shall be permitted if a practicable alternative with lesser effects is available. Controls discharges of dredged or fill material to protect aquatic ecosystems.	Operation and maintenance, along with monitoring activities that require activity in wetlands will be implemented to meet these requirements. EPA has determined that this alternative is the least damaging practicable alternative to protect wetland resources both on-site and off-site. At the time of the issuance of the ROD there was no public oposition to this finding.

Attachment 2 - Coakley Landfill Superfund Site, Operable Unit 1
Location-specific ARARs

Authority	Requirements	Status	Requirement Synopsis	Action to be Taken to Attain ARAR
State Requirements	Criteria and Conditions for Fill and Dredge In Wetlands: RSA Ch. 482-A and NH Admin. Code Env-Wt Parts 300 400, 600, and 700	Applicable	These standards regulate filling and other activities in or adjacent to wetlands, and establish criteria for the protection of wetlands from adverse impacts on fish, wildlife, commerce, and public recreation.	Wetlands are in close proximity to OU 1 where the landfill cap has been constructed. Operation and maintenance of the remedy, along with monitoring activities may have some limited impacts to State jurisdictional wetlands. Wetlands disturbed by well installation, landfill cap operation and maintenance, monitoring, or other remedial activities will be mitigated in accordance with requirements.
	Terrain alteration adjacent to surface waters; Env-Ws 415 and RSA 485-A:17	Relevant and Appropriate	The purpose of these rules is to protect surface water quality from degradation resulting from any activity which significantly alters terrain or occurs in or on the border of the surface waters of the state. The permanent methods for protecting water quality decribed include: vegetated filter strips, grassed swales, detention ponds, wet ponds, constructed wetlands, infiltration trenches, infiltration basins and water quality inlets.	Activities performed in association with the implementation of the remedy, including operation and maintenance of the landfill cap, along with monitoring, will be compliant with these standards and will result in the least adverse impact to surface waters/wetlands. Engineering controls (e.g. siltation controls, erosion controls) will be implemented during remedial activities to minimize harm to surface waters/wetlands. Excavated material, including well drillings, will be stockpiled and dewatered outside of wetland areas prior to off-Site disposal. Wetlands would be restored (using suitable soil and vegetation) where altered temporarily by the remedy.

Attachment 2 - Coakley Landfill Superfund Site, Operable Unit 1 Action-specific ARARs

Authority	Requirement	Status	Requirement Synopsis	Action to be Taken to Attain ARAR
Federal Requirements	Resource Conservation and Recovery Act (RCRA), 42 U.S.C.. §§ 6901 *et seq.,* Standards for identification and listing of hazardous waste, 40 C.F.R. Part 261	Applicable	New Hampshire has been delegated the authority to administer these RCRA standards through its state hazardous waste management regulations (Env-Wm 400). These provisions have been adopted by the State.	Any wastes generated by remedial activity will be analyzed by appropriate test methods. If found to be hazardous wastes, then they will be managed in accordance with the substantive requirements of the State hazardous waste regulations. Wastes that may be generated include: investigation derived waste from monitoring activities and contaminated media produced during the operation and maintenance of the landfill cap and other components of the remedy.
	RCRA, Standards applicable to generators of hazardous wastes, 40 C.F.R. Part 262	Applicable	New Hampshire has been delegated the authority to administer these RCRA standards through its state hazardous waste management regulations (Env-Wm 500). These provisions have been adopted by the State.	If remedial activity generates hazardous wastes, then they will be managed in accordance with the substantive requirements of the State hazardous waste regulations.
	RCRA, Standards for owners and operators of hazardous waste treatment, storage, and disposal facilities, 40 C.F.R. Part 264	Applicable	New Hampshire has been delegated the authority to administer these RCRA standards through its state hazardous waste management regulations (Env-Wm 700).	The Site's landfill meets regulatory standards to be a hazardous waste facility. Therefore, it will be operated and maintained in compliance with the substantive requirements of the State hazardous waste regulations.
	Clean Water Act (CWA), Section 402, 33 U.S.C. § 1342; 40 C.F.R.. 122-124, 131, 136 - Discharge of Pollutants	Applicable	These standards address water discharges which may be directed to surface water.	If a discharge from the remedial action is directed to surface water the discharge will be treated, if necessary, so that these standards will be achieved. Monitoring will be performed to determine whether operation and maintenance of the remedy could potentially affect nearby surface water bodies, in accordance with Env-Or-607 (see below).

Attachment 2 - Coakley Landfill Superfund Site, Operable Unit 1 Action-specific ARARs

Authority	Requirement	Status	Requirement Synopsis	Action to be Taken to Attain ARAR
	CWA, Ambient Water Quality Criteria (AWQC), 40 C.F.R. 122.44	Relevant and Appropriate	These regulations establish water quality standards for protection of human health and aquatic life.	Used to establish monitoring standards for surface waters and sediments. Surface water and sediment will be monitored annually to determine whether this alternative is effective in protecting areas outside of OU 1 from the migration of contaminants from the landfill.
	Safe Drinking Water Act (42 U.S.C. §300f *et seq.*); National primary drinking water regulations (40 C.F.R. 141, Subpart B and G)	Relevant and Appropriate	Establishes maximum contaminant levels (MCLs) for common organic and inorganic contaminants applicable to public drinking water supplies. Used as relevant and appropriate monitoring standards for aquifers and surface water bodies that are potential drinking water sources.	Used to establish monitoring standards for groundwater. The source control (landfill cap) remedy will be operated and maintained to prevent migration of contaminants outside of the compliance boundary established as OU 1. Long-term monitoring of contaminants, based on these standards, will be performed to evaluate whether the source control remedy is effective in preventing the migration of contaminants.
	Safe Drinking Water Act (42 U.S.C. §300f *et seq.*); National primary drinking water regulations (40 C.F.R.. 141, Subpart F)	Relevant and Appropriate for non-zero MCLGs only; MCLGs set as zero are To Be Considered.	Establishes maximum contaminant level goals (MCLGs) for public water supplies. MCLGs are health goals for drinking water sources. These unenforceable health goals are available for a number of organic and inorganic compounds.	Used to establish monitoring standards for groundwater. The source control (landfill cap) remedy will be operated and maintained to prevent migration of contaminants outside of the compliance boundary established as OU 1. Long-term monitoring, utilizing these standards, will be performed to evaluate whether the source control remedy is effective in preventing the migration of contaminants. Non-zero MCLGs are relevant and appropriate. MCLGs set at zero are to be considered.

Attachment 2 - Coakley Landfill Superfund Site, Operable Unit 1 Action-specific ARARs

Authority	Requirement	Status	Requirement Synopsis	Action to be Taken to Attain ARAR
State Requirements	Contaminated Site Management, NH Admin. Code Env-Or 600: Part 607, Groundwater Management Permits; Part 608, Activity and Use Restrictions; Part 610, Monitoring; Part 611, Contaminated Soils	Applicable	Env-Or Part 607 provides for establishment of Groundwater Management Zones (GMZ) to control use of groundwater that exceeds AGQS, requires monitoring of the groundwater quality within the GMZ, requires implementation of measures to restore the groundwater quality, and requires an evaluation of the effectiveness of the measures. Part 608 establishes standards for setting institutional controls to protect human health and components of the remedy. Part 610 establishes standards for monitoring groundwater, including requirements and criteria for constructing, developing, and decommissioning monitoring wells. Part 611 establishes standards for managing contaminated soils.	A GMZ will be established for OU 1 to protect against use of contaminated groundwater. Note that even if compliance with these standards is acheived, groundwater use restrictions may still be required for the remedy if there are more stringent federal compliance standards that still have not been achieved. Activity and use restrictions will be established to prevent human exposure to contaminated groundwater and protect components of the remedy. Groundwater monitoring will be required until State ground water standards are acheived throughout the GMZ (monitoring will be continued if additional Federal groundwater standards still need to be achieved). Groundwater monitoring wells will be installed, operated, and decommissioned under these standards. Contaminated soils generated from installation of wells, operation and maintenance of the landfill cap, and any other remedial activity will be managed in compliance with these standards.
	Identification and Listing of Hazardous Wastes, N.H.. Admin. Code Env-Wm 400, Toxicity Characteristic	Applicable	These standards list particular hazardous wastes and identify the maximum concentration of contaminants for which the waste would be a RCRA characteristic waste. The analytical test set out in Appendix II of 40 C.F.R.. Part 261 is referred to as the Toxicity Characteristic Leaching Procedure (TCLP). The federal requirements 40 C.F.R. Part 261 are incorporated by reference.	Any wastes generated by remedial activity will be analyzed to determine whether they are listed or characteristic hazardous waste under these standards. Materials that are listed waste or exceed TCLP hazardous waste thresholds will be disposed off-site in a RCRA Subtitle C facility. Non-hazardous materials will be disposed appropriately.

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Authority	Requirement	Status	Requirement Synopsis	Action to be Taken to Attain ARAR
	Requirements for Hazardous Waste Generators, N.H. Admin. Code Env-Wm 500 [formerly He-P Ch. 1905.06]: including Part 507 Storage Requirements; Part 513 Emergency/Remedial Actions	Applicable	Requires determination as to whether waste materials are hazardous and, if so, requirements for managing such materials on site prior to shipment off site. The federal requirements 40 C.F.R. Part 262 are incorporated by reference.	If remedial activity generates hazardous wastes, then they will be managed in accordance with the substantive requirements of these regulations.
	Requirements for Owners and Operators of Hazardous Waste Facilities/Hazardous Waste Transfer Facilities, N.H.. Admin. Code Env-Wm 700 [formerly He-P Ch. 1905.08]: including § 702.10 Groundwater Monitoring; § 702.11, Other Monitoring; Part 706, Emergency/Remedial Actions; Part 708, Facility Standards	Applicable	This regulation establishes requirements for owners or operators of hazardous waste sites. Part 708 incorporates by reference the federal requirements under 40 C.F.R. Part 264, including but not limited to Subpart G (closure/post closure), Subpart I (containers), Subpart J (tanks)	The landfill meets regulatory standards to be a hazardous waste facility. Therefore, it will be operated and maintained in compliance with these standards.

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Authority	Requirement	Status	Requirement Synopsis	Action to be Taken to Attain ARAR
	Rules Governing the Control of Air Pollution, RSA Ch. 125-C, Air Pollution Control; NH Admin. Code Env-A 100-4300	Applicable	These provisions establish standards for the release of air emissions, including VOCs and hazardous air pollutants. Applicable standards include the most stringent of the following requirements: (1) New Source Performance Standards, (40 C.F.R. Part 60); (2) National Emissions Standards for Hazardous Air Pollutants (40 C.F.R. Part 61); and (3) New Hampshire State Implementation Plan limits. See RSA 125-C:6.	If operation and maintenance actions, along with monitoring, causes a release of contaminants from groundwater to the unsaturated zone, emissions controls will be included in the remedial design to control emissions.
	Drinking Water Quality Standards: NH Admin. Code Env-Ws 314 MCLs and MCLGs for Inorganics; NH Admin. Code Env-Ws 315 MCLs and MCLGs for Regulated Organics	Relevant and Appropriate for MCLs and non-zero MCLGs only; MCLGs set as zero are To Be Considered.	State MCLs and MCLGs establish maximum contaminant levels permitted in public water supplies and are the basis of State Ambient Groundwater Quality Standards (AGQS) that are applicable to site ground water. The regulations are generally equivalent to the Federal Safe Drinking Water Act (SDWA).	Used to establish monitoring standards for groundwater. The source control (landfill cap) remedy will be operated and maintained to prevent migration of contaminants outside of the compliance boundary established as OU 1. Long-term monitoring of contaminants, based on these standards, will be performed to evaluate whether the source control remedy is effective in preventing the migration of contaminants.
	New Hampshire Ambient Groundwater Quality Standards (NH AGQS) (Env-Or 603.03, Table 600-1).	Relevant and Appropriate	Establishes maximum concentration levels for regulated contaminants in groundwater which result from human operations or activities. NH AGQS are equivalent to MCLs for contaminants that have MCLs. NH AGQS have been established for site groundwater contaminants for which no MCLs are established, and are derived to be protective for drinking water uses. The NH AGQS will be used for site contaminants where MCLs are not currently established.	Used to establish monitoring standards for groundwater. The source control (landfill cap) remedy will be operated and maintained to prevent migration of contaminants outside of the compliance boundary established as OU 1. Long-term monitoring of contaminants, based on these standards, will be performed to evaluate whether the source control remedy is effective in preventing the migration of contaminants.

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	Groundwater Protection Standards: NH Admin. Code Env-Or 603.01(a) and (b)	Applicable	Wm-Or 603.01(a) and (b) provide that groundwater shall be suitable for use as drinking water without treatment and shall not contain any regulated contaminant in concentrations greater than ambient groundwater quality standards established in Env-Or 603.03.	Used to establish monitoring standards for groundwater. The source control (landfill cap) remedy will be operated and maintained to prevent migration of contaminants outside of the compliance boundary established as OU 1. Long-term monitoring of contaminants, based on these standards, will be performed to evaluate whether the source control remedy is effective in preventing the migration of contaminants.
	Nondegradation of Groundwater to Protect Surface Water: NH Admin. Code Env-Or 603.01 (c)	Applicable	Wm-Or 603.01(c) provides that, unless naturally occurring, groundwater shall not contain any contaminants at concentrations such that groundwater to surface water results in a violation of surface water standards in any surface water body within or adjacent to the site. Env-Or 603.01 (c) therefore incorporates surface water standards set forth at Env-Ws 1700.	Used to establish monitoring standards for groundwater. The source control (landfill cap) remedy will be operated and maintained to prevent migration of contaminants outside of the compliance boundary established as OU 1. Long-term monitoring of contaminants, based on these standards, will be performed to evaluate whether the source control remedy is effective in preventing the migration of contaminants.
	Ambient Air Quality Standards, NH Admin. Code Env-A 300	Applicable	These regulations set primary and secondary ambient air quality standards (equivalent to federal standards). The standards do not allow significant deterioration of existing air quality in any portion of the state for: particulate matter, sulfur dioxide, carbon monoxide, nitrogen dioxide, ozone hydrocarbons and lead.	If there are remedial processes that result in releases of contaminants into the air, air quality standards will be complied with during remedial activities.
	Fugitive Dust, N.H.. Admin. Code Env-A Part 1002	Applicable	Requires precautions to prevent, abate and control fugitive dust during specified activities, including excavation, maintenance, and construction.	Precautions to control fugitive dust emissions will be required during site remediation activities that could generate dust, such as maintenance of the landfill cap and monitoring well installation.

Attachment 2 - Coakley Landfill Superfund Site, Operable Unit 1 Action-specific ARARs

Authority	Requirement	Status	Requirement Synopsis	Action to be Taken to Attain ARAR
	Regulated Toxic Air Pollutants, NH Admin. Code Env-A Part 1400	Applicable	This regulation identifies toxic air pollutants to be regulated. These pollutants are also listed by EPA in 40 CFR 261. High, moderate and low Toxicity Classifications are established. Air toxics in these classifications are regulated when they occur in concentrations that cause adverse health effects including increased cancer risk.	If there are remedial processes that result in releases of contaminants into the air, air quality standards will be complied with during remedial activities.
	Surface Water Quality Regulations, NH Admin. Code Env-Ws 1700	Applicable	These rules establish water quality standards for the state's surface waters. Water quality criteria for toxic substances are established. [See Part Env-Ws 1703 Water Quality Standards and Env-Ws 1704 Alternative Site Specific Criteria]. These rules are applicable to point or non-point discharge(s) of pollutants to surface waters.	Standards will be used for monitoring to measure the performance and effectiveness of the remedial action in preventing contaminated groundwater from degrading nearby surface waters.
	Interim Criteria for Groundwater Discharges: NH Admin. Code Env-Ws 1500	Applicable	These regulations establish substantive requirements for discharges to groundwater, including prohibited discharges (Env-Ws 1503,04), compliance criteria (Env-Ws 1504.03), and water quality sampling (Env-Ws 1507.01).	If the operation and maintenance of the landfill cover or the monitoring system requires discharge to groundwater, these standards will be complied with.
	Management of Contaminated Soil, NH Admin. Code Env-Or 611	Applicable	Establishes requirements for managing contaminated soils, including requirements for sampling and analysis of soil destined for off-site treatment or disposal, storage requirements for stockpiled soil, and disposal requirements.	Any remedial activities on the site that generates and stockpiles contaminated soil requiring on-site management or off-site disposal will comply with these requirements. Minimal soil generation is anticipated from the installation of monitoring wells and the operation and maintenance of the landfill cap.

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Authority	Requirement	Status	Requirement Synopsis	Action to be Taken to Attain ARAR
	Standards for Construction, Maintenance and Abandonment of Wells, NH Admin. Code Env-We 600	Applicable	This provision requires that wells be constructed, maintained, relocated, and/or abandoned according to these regulations.	Wells used for the remedy will be created, operated, and closed in compliance with these standards.